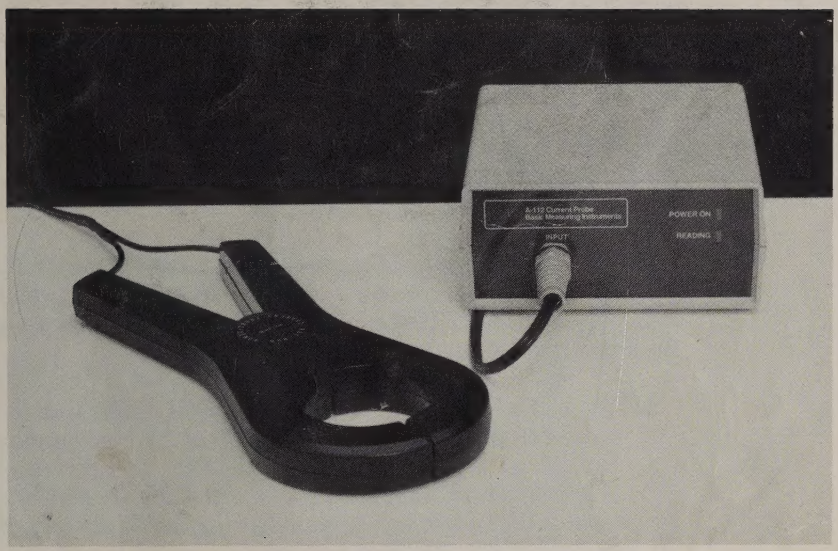


A-112 Current Probe

The A-112 Current Probe lets PowerScopes print current waveshape graphs, current impulses and true rms current measurements. The A-112 Current Probe helps identify and solve power problems.

PLEASE NOTE
FAILURE TO RETURN THIS MANUAL WILL RESULT IN A MINIMUM BILLING CHARGE OF **$50.00.**

PLEASE INCLUDE MANUAL AND ACCESSORIES WHEN RETURNING EQUIPMENT

LEASAMETRIC
1166 TRITON DR. • FOSTER CITY, CA 94404

L16 (REV. 04/85)

BMI Basic Measuring Instruments

A-112 Current Probe

The A-112 Current Probe expands the monitoring and diagnostic capabilities of the BMI PowerScope by capturing, measuring and printing graphs and text reports of current waveshapes and current transients. You set similar types of thresholds as on a voltage channel, and any current disturbances outside these thresholds are recorded and printed by the PowerScope. The probe measures both instantaneous and true rms current. It uses a spring-loaded clamp that surrounds a power conductor, so you can take measurements without cutting wires.

Connecting the Probe

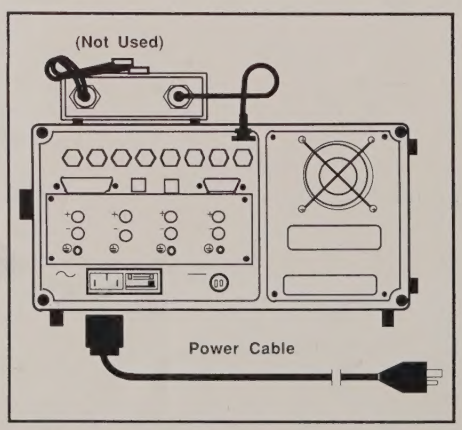
The A-112 Current Probe is equipped with two sets of connection cables: the hexagonal environmental connector, and the main channel connectors. Connect the cables before you power up the PowerScope.

You must always plug in the environmental connector, but you have a choice of whether or not to use one of the main channels for high resolution current disturbance graphs. If you want such graphs, you must plug both cables into the PowerScope.

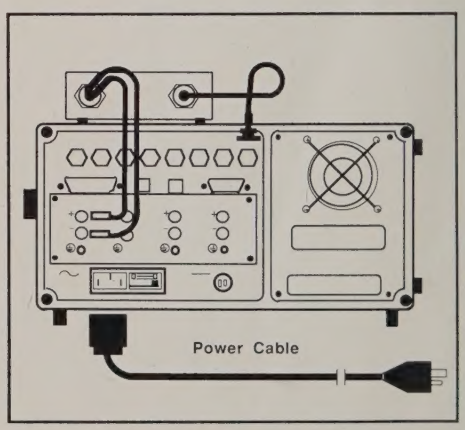
1. **The environmental connector.** This cable should always be connected. Simply plug it in to any of the environmental channels on the back of the PowerScope. This provides power to the Current Probe, and enables the PowerScope to print summary strip charts and text reports of current disturbances. Be sure to plug the environmental connector in BEFORE you attach the clamp.

2. **The main channel connector.** This cable should be attached if you want high resolution current graphs of power disurbances. This connection enables the PowerScope to print current disturbances in the same manner as voltage disturbances. You must specify the connection type as "Ind. Channels" when setting up the PowerScope.

WARNING:
There are high voltages on the Main Channel connectors of the Current Probe. Use standard safety precautions.



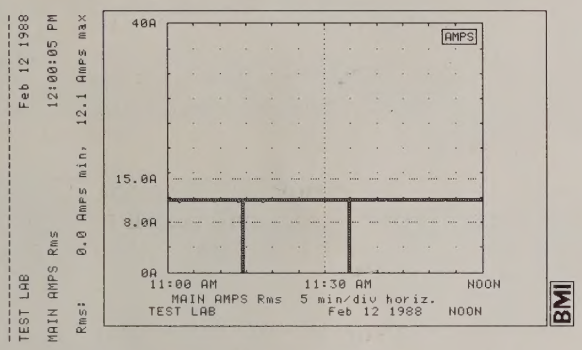
Environmental sensor connections.



Main channel connections, for high resolution graphs.

Environmental Channel Output

The environmental channel enables the PowerScope to print summary strip charts and text reports of rms current measurements. You may choose strip chart intervals of 1, 3, 6, 12 or 24 hours. All current graphs have the word "AMPS" in the upper right corner.



One-hour summary chart of Rms current, with thresholds set at 8 and 15 amps.

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TEST LAB                      Feb 12 1988

STRIP CHART REPORT                 1:00 PM
 From   NOON     To  1:00 PM

MAIN AMPS  (Channel 1)
 Rms:     11.3 Amps min,  11.9 Amps max
 Imp:        0 counted

AMPS D (Sensor D)
 Rms:     10.6 Amps min,  14.7 Amps max


---------------------------------------
TEST LAB                      Feb 12 1988

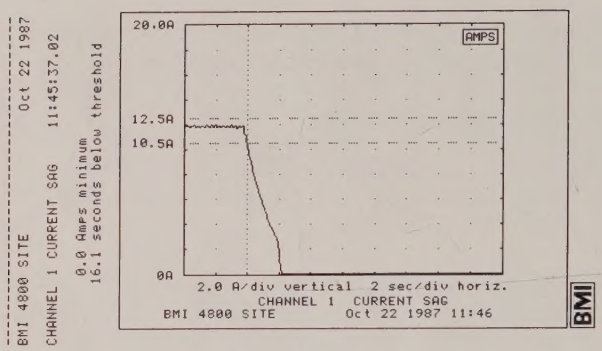
AMPS D    CURRENT SAG          1:09:44 PM
(Sensor D)

 Current below            8.0 Amps
```

One hour strip chart report, followed by a current sag report.

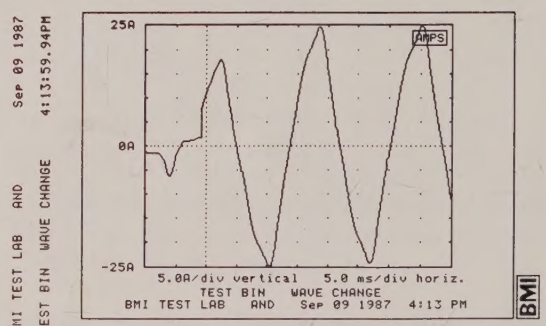
You may choose summary strip charts, text reports or both. At left is a typical 1-hour shrip chart report of current, and a current sag report.

Main Channel Output



The main channel connections enable the PowerScope to print graphs of current disturbances, and waveshape faults.

Typical graph of a current sag from the main channel output.



Typical graph of a current waveshape change.

Connecting the Clamp

Connect the cables from the rear of the A-112 Current Probe to the PowerScope, and power up the PowerScope before you attach the clamp to a conductor.

WARNING
You are working with high voltages that can cause burns and lethal shocks. USE STANDARD SAFETY PRECAUTIONS.

Attaching the clamp to a conductor.

Squeeze the handles of the clamp to surround the conductor. The clamp uses a transformer to measure current, so cutting and splicing of wires is not required. Position the clamp so that it will not slide or create a hazard.
The clamp must rest in a secure, stable position. Moving the clamp while the PowerScope is monitoring may generate a false disturbance.

Setup Menu for the Environmental Sensor

The questions that follow will appear as part of the Setup and Report Menus when the Current Probe is connected to the PowerScope.

These questions appear after the questions for the main channel thresholds, whether you are using the main channel for voltage or current. The environmental sensor connections must always be made to the PowerScope in order for the Current Probe to work.

Sensor setup: G	Selections A through H. This is the letter of the environmental channel that you plugged the probe into.
Name: AMPS G	The default name for the Current Probe is AMPS followed by the channel. Use the number/keypad to choose a name up to 9 characters for this probe. Typical names are "LINE AMPS", "NEUT AMPS", etc.
Sensor Mode: Off	Use the VALUE UP/VALUE DOWN keys to choose On or Off. Default is Off. The Main channel provides more detail than the environmental sensor, so you may want to turn the sensor mode off.

If you choose Sensor Mode: On, the following questions will appear.

AMPS G hi 25.0Arms	Use the number/letter keypad to select the upper threshold for current surges. The range is from 6 to 600 amps true Rms.
AMPS G low 10.0Arms	Use the number/letter keypad to select the current sag threshold. The range is from 5.9 to 599.9 amps true Rms.
End of Setup Menu	This marks the end of the Setup Menu for the environmental sensor channel.

Report Menu Questions

The Report Menu lets you choose to print summary strip charts of amperage (at 1, 3, 6, 12 or 24-hour intervals), or text reports, or both.

AMPS G rms: Both	Use the VALUE UP/VALUE DOWN keys to choose Both, 1-Hr (or 3, 6, 12, 24 hours), Text or Off for the rms signal.
AMPS G Imp: Both	Use the VALUE UP/VALUE DOWN keys to choose Both, 1-Hr (or 3, 6, 12, 24 hours), Text or Off for the impulse signal.

Setup Questions for the Main Channel

These questions appear in the PowerScope Setup menu when you choose Independent Channels in the Setup menu, when using the main channel.

If you choose not to use a main channel to monitor current (that is if you want only summary strip charts and text reports of current) then you don't need to attach the main channel cables from the Current Probe. Any main channels not used by the Current Probe are free to monitor voltage, as described in the PowerScope User's Guide.

Type: Ind. Channels

Use the VALUE UP/VALUE DOWN keys to choose Ind. Channels. Other choices are Single phase, Dual 1-phase, 3-phase delta, 3-phase wye and Ind. channels.

Channel Setup: 1

Use the VALUE UP/VALUE DOWN keys to choose which channel you are setting thresholds for now. For this example assume the Current Probe is connected to channel 1.

Mode: AMPS

Use the VALUE UP/VALUE DOWN keys to select AMPS mode for channel 1. Selections are OFF, AC, DC, NEUT-GND, and AMPS.

Name: CHANNEL 1

Use the number/letter keypad to choose a name up to 9 characters. Typical names are "LINE AMPS", "NEUT AMPS" etc. The default name is the channel number.

At this point it is recommended you push the STATUS button on the PowerScope to get an idea of what the current level is. This will assist you in setting the thresholds that follow.

Surge Amps: 110 Arms

Use the number keys to enter the high current threshold. The usual value is about 10% above nominal. The range available is 1.0 to 600.0 amps.

Sag Amps: 90.0 Arms

Use the number keys to enter the low current threshold. The usual value is about 15% below nomimal. The range available is 0.0 to 599.9 amps.

Impulse thr.: 125 Apk

Use the number keys to enter the impulse current threshold.

NOTE: The next question will appear only if you have Impulse Ranging in the Key Operator Menu set to Manual. Otherwise, the range is set automatically. See the charts on page 7.

Impulse Range: 200 Apk

Use the VALUE UP/VALUE DOWN keys to select the full-scale impulse range for current. See charts page 7 for selections.

Automatic Impulse Ranging Table

The chart below indicates what the full-scale range will be when you select a particular impulse threshold. This setting is assigned automatically when the full-scale range question is set to AUTOMATIC in the Key Operator menu.

If Impulse Threshold selected is . . .	Impulse Full-Scale Range will be . . .
20 - 50 Apk	± 100 Apk
51 - 100 Apk	± 200 Apk
101 - 200 Apk	± 400 Apk
201 - 400 Apk	± 800 Apk
401 - 599 Apk	± 1600 Apk

Manual Impulse Ranging Table

Use the following chart to select threshold limits and full-scale ranges when the Key Operator Menu is set to MANUAL ranging.

If Impulse Threshold selected is . . .	Impulse Full-Scale Ranges ranges available are . .
20 - 24 Apk	± 100 or 200 Apk
25 - 49 Apk	± 100, 200 or 400 Apk
50 Apk	± 100, 200, 400 or 800 Apk
51 - 99 Apk	± 200, 400 or 800 Apk
100 Apk	± 200, 400, 800 or 1600 Apk
101 - 199 Apk	± 400, 800 or 1600 Apk
200 Apk	± 400, 800 or 1600 Apk
201 - 399 Apk	± 800 or 1600 Apk
400 Apk	± 800 or 1600 Apk
401- 599 Apk	± 1600 Apk

Calibration

The A-112 Current Probe should be calibrated once a year. You may arrange to send the Current probe to BMI for calibration by calling the Customer Service Department. The telephone numbers are listed here:

California only - (800) 451-3040
Outside of California - (800) 634-1233
Corporate offices - (415) 570-5355
TWX - (910) 374-3059

Specifications

Dimensions:	**Probe Housing**	**Clamp**
Length	5.25 in (13.5cm)	9.0 in (23cm)
Width	5.0 in (12.8cm)	3.7 in (9.5cm)
Height	2.4 in (6.2cm)	0.8 in (2 cm)
Inside Diameter		2.0 in (5.1cm)

Cables to PowerScope - 6 ft (1.8 m)
Cable to clamp - 3 ft (1 m)

Weight: 2 lbs (910 g)

Output:	Environmental Channel (True Rms)	Main Channel (High Resolution)
Dynamic Range	6 - 600A	1 - 600A
Resolution	6A	0.1A
Scale Factor	1V/100A	1V/1A
Accuracy at 50 - 60 Hz	±10% of reading	±10% of reading
3 dB Bandwith	2Hz - 2kHz	2Hz - 2kHz

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Part Number 89001702